****DRAFT****

Fire Regime Condition Class (FRCC) Interagency Handbook Reference Conditions

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Date: 06/08/04

PNVG Code: (CODE) JPBN
Jack pine Northern Lower Mich.

Potential Natural Vegetation Group: Great Lakes pine forests: Jack pine barrens

Geographic Area: Lower peninsula of Michigan

Description: Potential natural vegetation group common to very dry, flat outwash plains underlain with coarse-textured sandy soils. Jack pine, red pine and barrens predominate. Aspen, white oak, and white pine may be present.

Fire Regime Description: Fire regime group II, with fires occurring every 30 to 40 years and replacement fires occurring every 50 to 60 years. Severe wind events affect mature stands on an approximate 200 year interval.

Vegetation Type and Structure

Class*	Percent of Landscape	Description
A: post replacement	20	Barrens dominated by carex, grasses, and herbaceous plants. Trees comprise less than 10% canopy coverage.
B mid- seral young	25	Young jack pine stands less than 15 years of age. Non seed bearing.
C: mid-seral mature	40	Jack pine dominated stands 15 to 100 years. In absence of fire most jack pine die by age 100 and this class reverts to barrens (80%) or red pine (20%)
D: late- seral young	5	Open red pine/jack pine stands less than 50 years of age
E: late- seral mature	10	Open and closed red pine stands greater than 50 years of age
Total	100	

All classes burn at an average rate of 4 % per year with the caveat that stands do not reburn for 10 years. This is equivalent to a 30 - 35 year fire return interval. Jack pine fire severity increases with age with nearly 100 mortality in mature stands. Cones are serotinous and areas quickly regenerate to jack pine. Red pine stands are more susceptible to replacement fires before age 50. Non-lethal surface fires predominate in mature red pine stands. Both species are short lived with jack pine living to about age 100 and red pine to age 150. The fire frequency and severity varies by succession class as follows:

A: **Barrens**: All fires are replacement and set this class back to barrens. Without fire barrens persist for 25 years before they regenerate to jack pine (80%) or red pine (20%).

B: **Jack pine stands less than 15 years of age**. Fires are 60 % replacement and 40 % mosaic. Since jack pine do not produce viable seed until about age 15, replacement fires result in a barren.

C: **Jack pine stands 15-100 years of age**. Fires in this class are 80 % replacement and 20 % mosaic. Fire severity increases with age. Replacement fires result in a young jack pine stand. The few stands that escape replacement fire die after age 100 and revert to barrens (80%) and red pine (20%).

D: **Open red pine/jack pine stands less than 50 years of age**. Fires are 50 % replacement and 50 % mosaic. Since red pine on these sites doesn't produce viable sufficient seed until age 50, replacement burns result in a barren.

E. **Open red pine stands greater than 50 years of age.** Larger red pine are more resilient to wildfire. Assumed fire severities are 90 % non-lethal surface fires and 10 % replacement fires. Red pine stands die after age 150 and revert to young red pine stands. Surface fires maintain stands at a lower stocking level allowing for less moisture competition for individual trees. Repeated surface fires prolong the life of the large trees.

Fire Severity	Fire Frequency (yrs)	Probability	Percent, All Fires	Description
Replacement Fire	40-60 years	.02	60	All fires in barrens and 80 % of fires in mature jack pine are replacement
Non-Replacement Fire	30-100	.015	40	Primarily surface fire in older red pine. Mosaic fire in young classes.
All Fire Frequency*	35	.035	100	

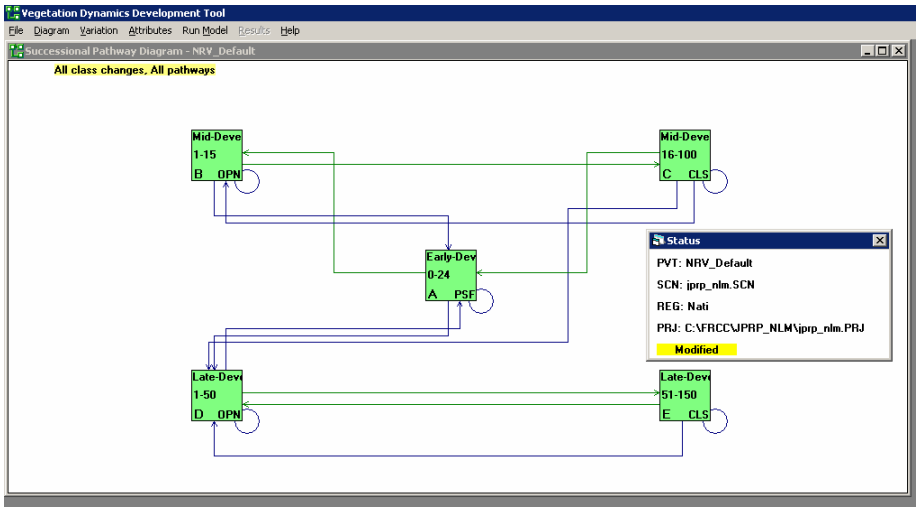
*All Fire Probability = sum of replacement fire and non-replacement fire probabilities. All Fire Frequency = inverse of all fire probability (previous calculation).

References

Cleland

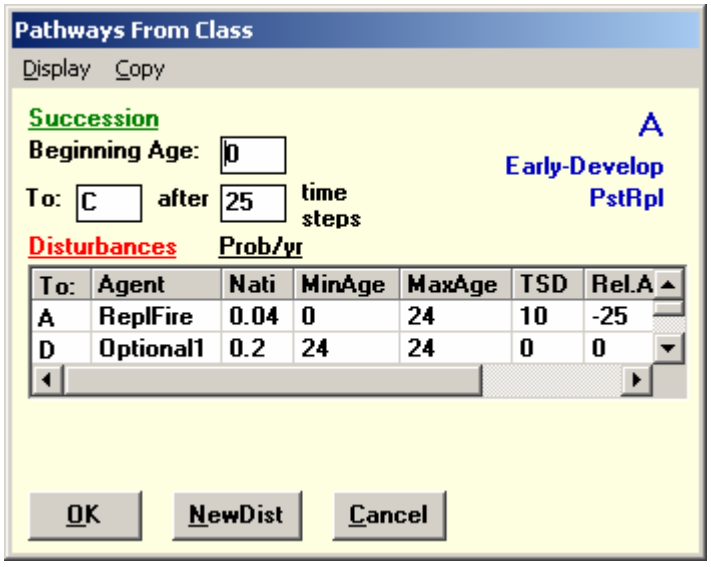
VDDT file documentation

Model jprp_nlm located in C:/FCCC/rpwp_nlm: This model is applicable for the area in and around the Huron National Forest in the upper lower peninsula of Michigan. VDDT text files must be loaded into C:/FRCC for project file to work.

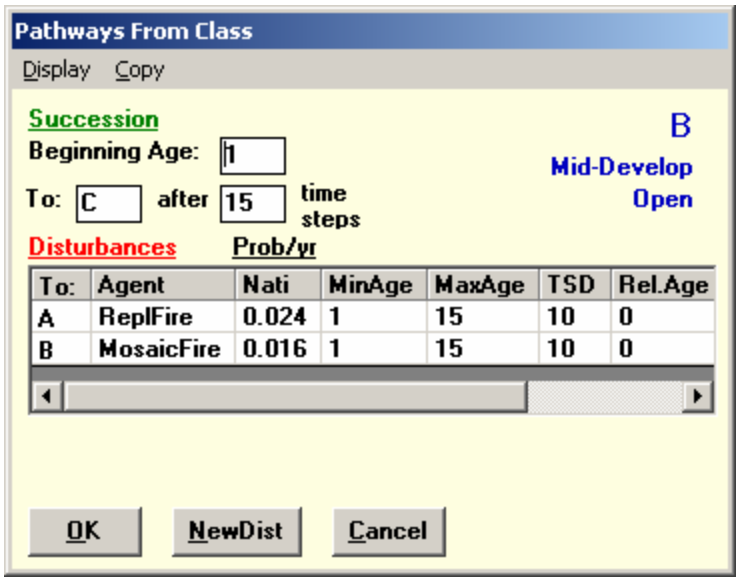


Disturbances by class:

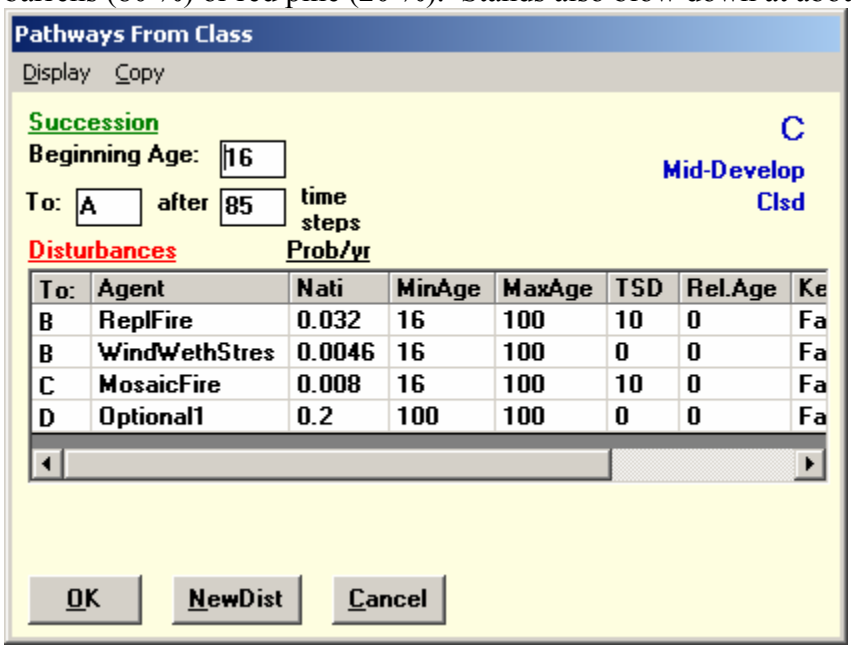
Class A: All fires are replacement and occur only after 10 years have elapsed since the previous fire (TSD=10). Class A succeeds to a young jack pine stand (Class B). Optional1 disturbance is used to succeed 20 % of class to red pine (class D).



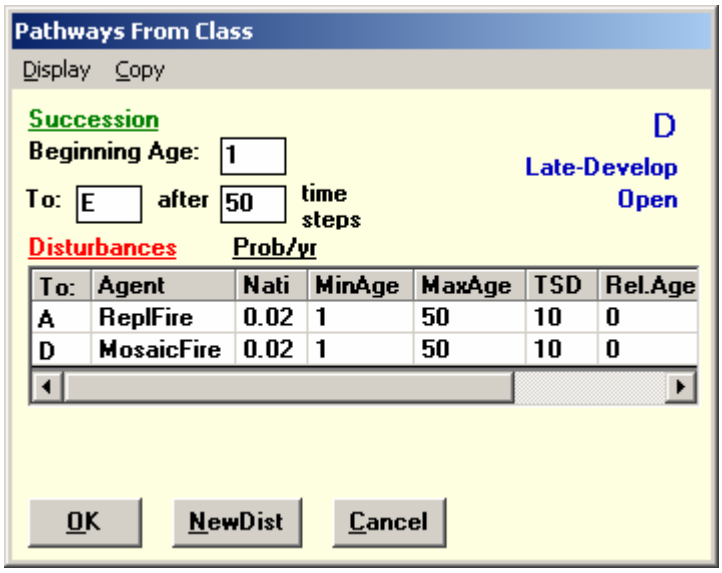
Class B - young jack pine < 15 years: Fires are 60% replacement and 40 % mosaic. Replacement burn areas go to barrens (class A) due to lack of jack pine seed.



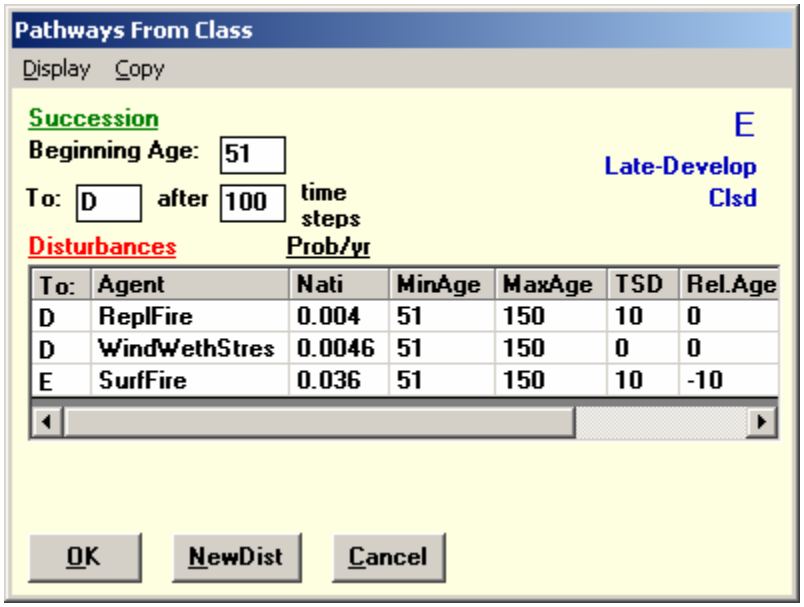
Class C – mature jack pine: Fires are 80 % replacement and 20% mosaic and occur 10 or more years following previous fire. Stands die if they live to 100 years and go to barrens (80 %) or red pine (20 %). Stands also blow down at about a 220 year interval.



Class D – young red pine < 50 years: Fires are 50 % replacement and 50 % mosaic. Replacement fires go barrens (class A).

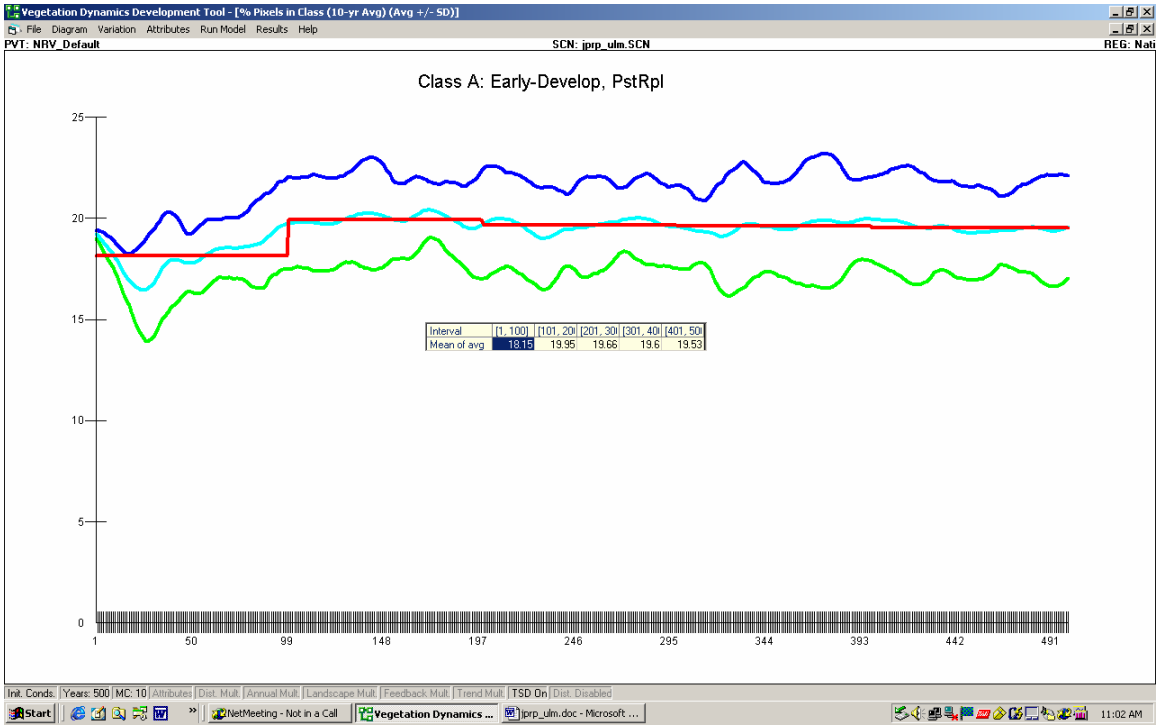


Class E– older red pine >50 years: Fires are 10 % replacement and 90 % surface. Replacement fires go young red pine (class D). Stands die after age 150 and revert to young red pine. Surface fires reduce stocking and moisture competition of remaining trees increasing the time stands can remain in this class.

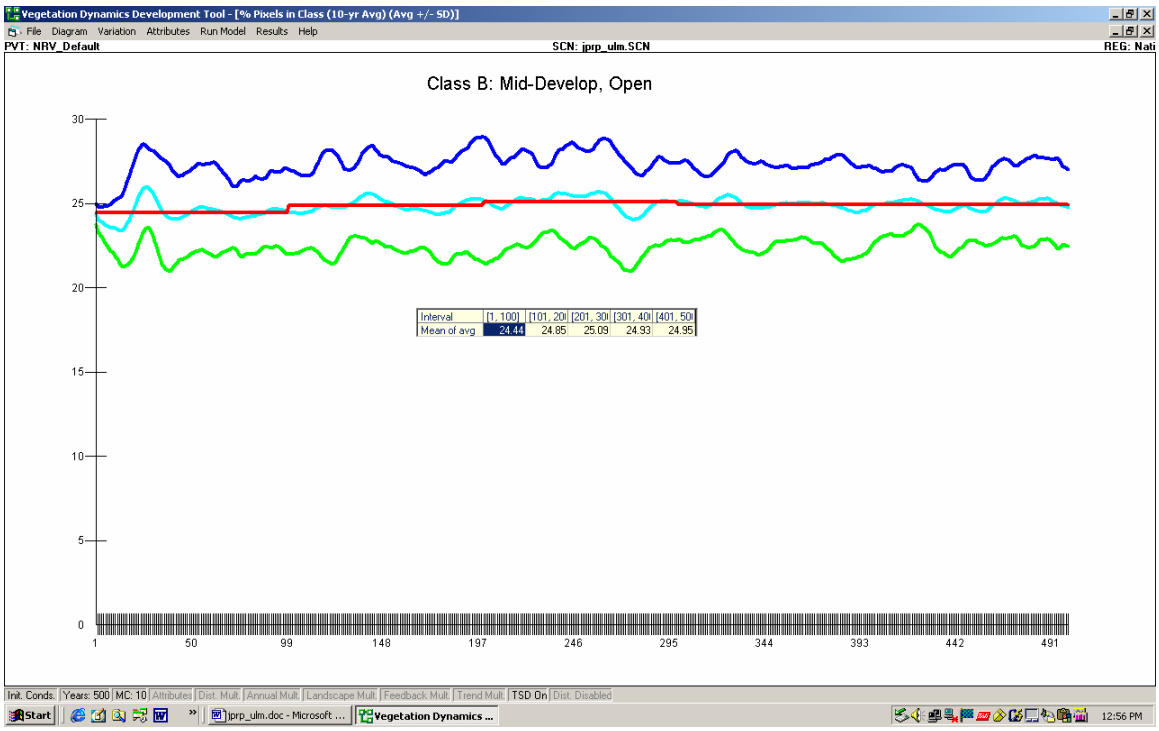


Results graphs: These graphs show the average per cent of area in each class projected for 500 years. These are 10-year-average graphs + or - 2 SD's.

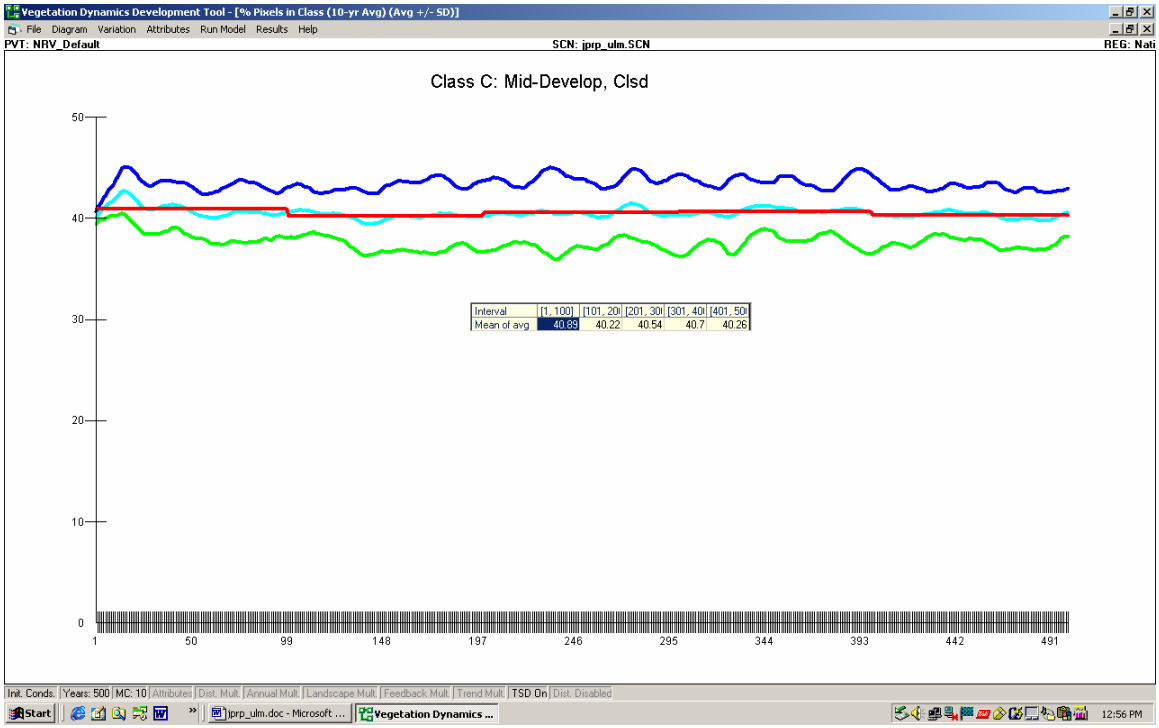
A: Barrens:



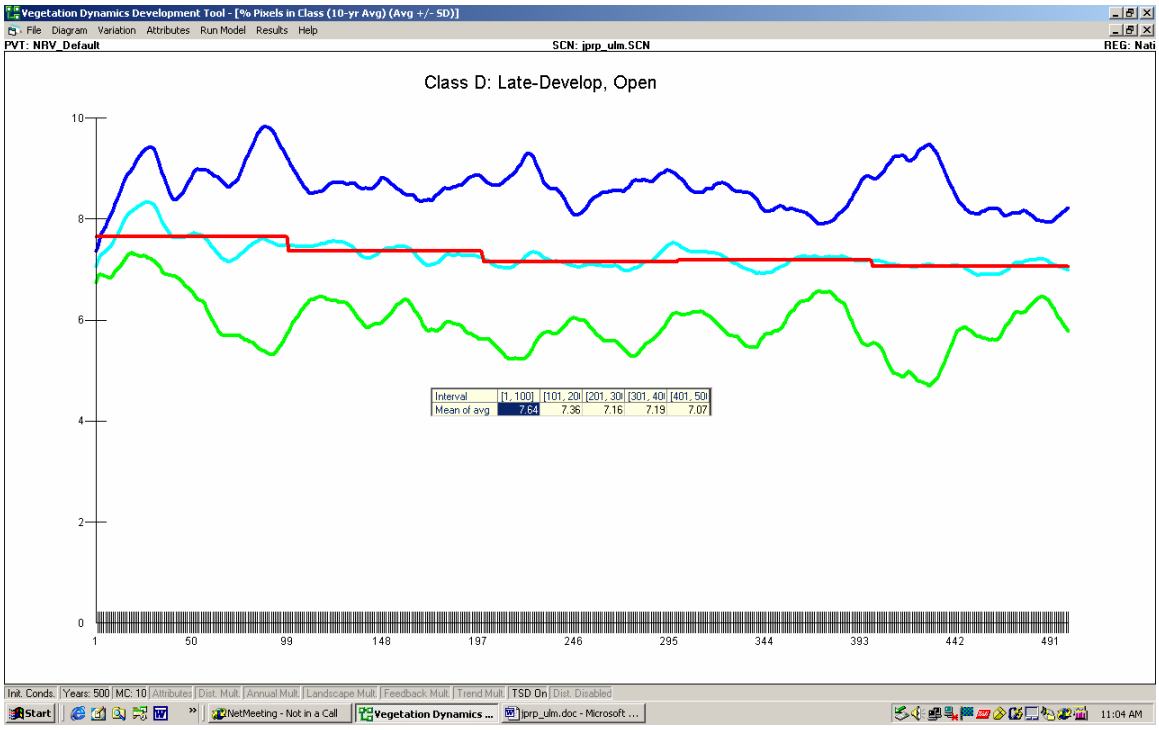
B: Jack pine stands < 15 years of age



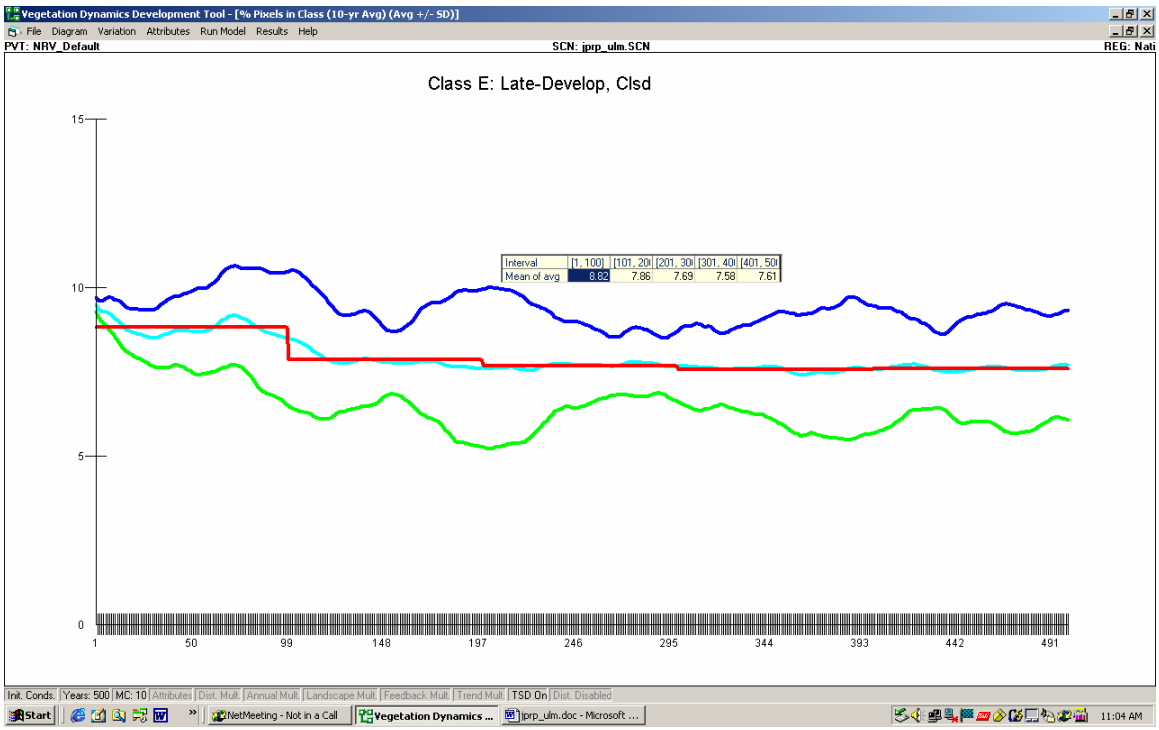
C: Jack pine mature 15-100 years



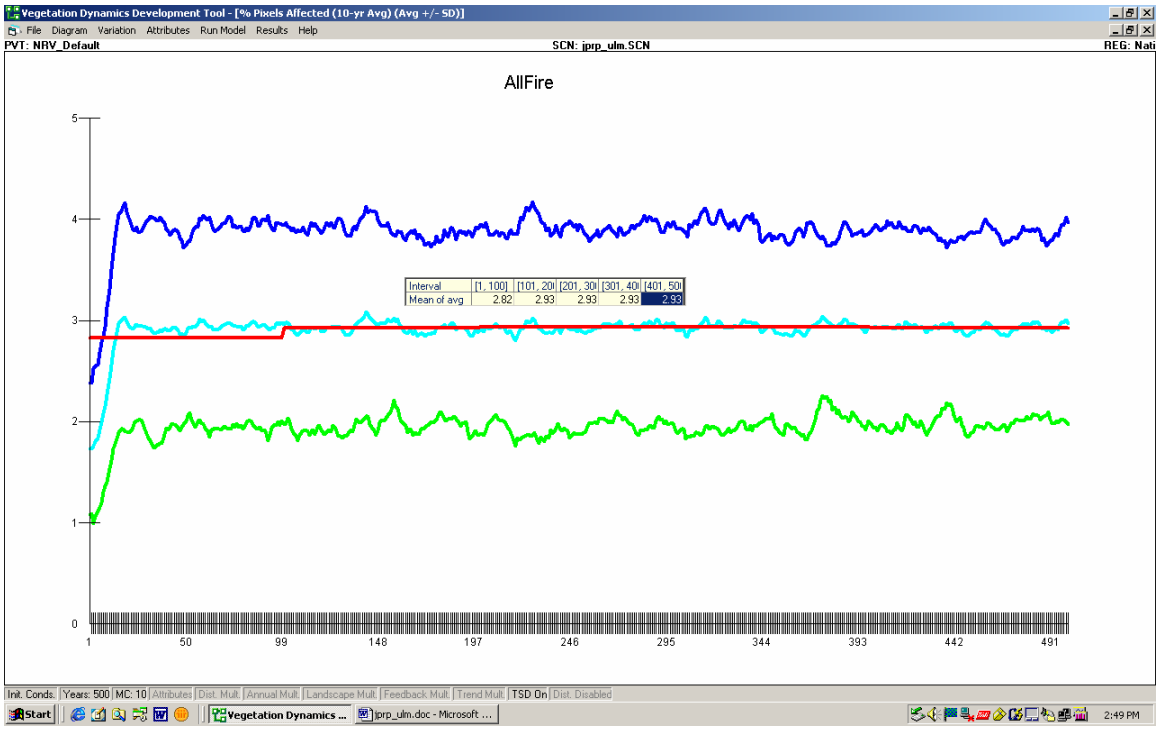
D: Young red pine stands < 50 years of age



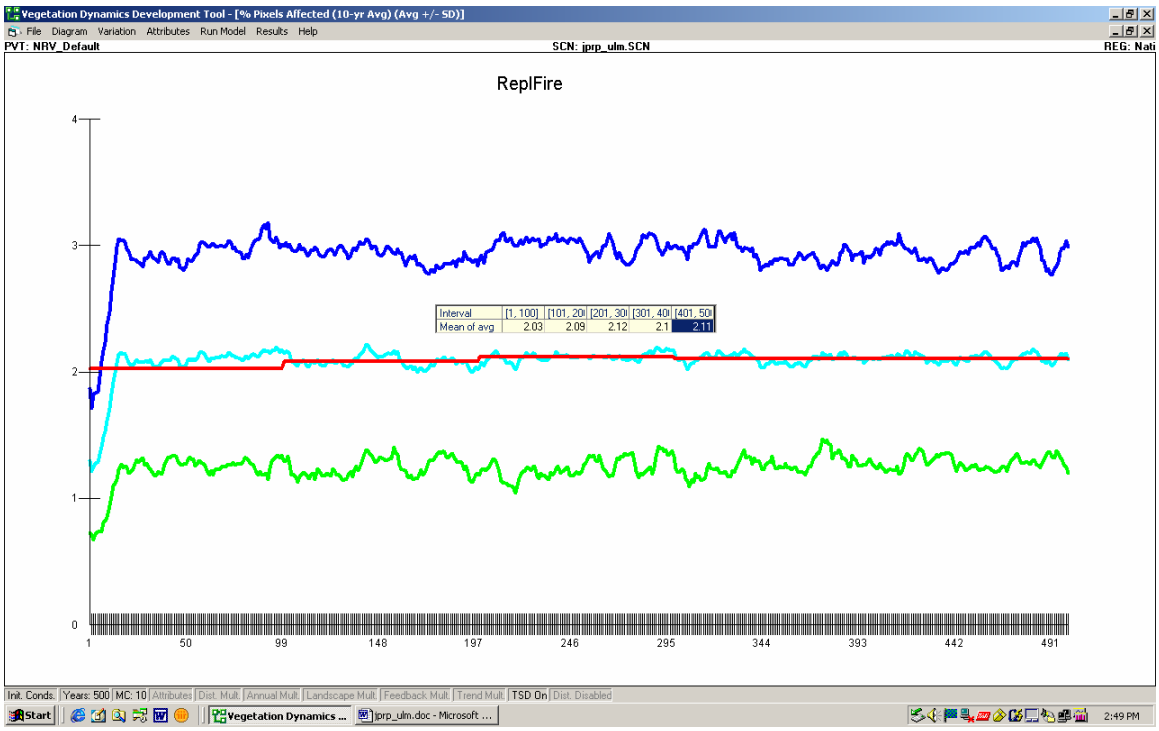
E: Older red pine stands > 50 years of age



All fire frequency: Approximately 2.95 % of the area burns per year for a FRI of about 34 years.



Replacement fire frequency: Approximately 2.1 % of the area burns per year for a replacement FRI of 48 years.



Non-replacement fire frequency: Approximately 0.8 % of the area burns per year for a non-replacement FRI of about 125 years